

What Is Claimed Is:

1. A method of manufacturing plated through holes comprising:
bonding wires to a first substrate;
plating the wires with an electrically conductive material;
forming a dielectric material around the plated wires to create a second substrate;
removing a portion of the plating material to expose the wires; and
removing the wires leaving the plated material disposed within the second substrate
forming the plated through holes.
2. The method of claim 1, wherein the wires are curved.
3. The method of claim 1, wherein the step of removing a portion of the plating material comprises grinding away a portion of the second substrate with the plating material disposed therein.
4. The method of claim 1, further comprising the step of removing the first substrate.
5. The method of claim 4, further comprising:
planarizing a first surface of the second substrate where the first substrate was attached,
wherein the step of removing a portion of the plating material comprises planarizing a
second surface of the second substrate opposite the first surface.

6. The method of claim 4, wherein the first substrate has a surface contacting the second substrate which is coated with a release material, and wherein the step of removing the first substrate comprises etching away the release material.

7. The method of claim 1, further comprising:

coating the first substrate with a conductive material for bonding the wires onto prior to the step of bonding the wires to the first substrate,

wherein the step of plating the wires is performed by electroplating to plate the wires and the conductive material on the first substrate, and

wherein the step of removing the first substrate comprises removing a portion of the plating material disposed on the first substrate.

8. The method of claim 4, further comprising:

applying a masking material to the first substrate prior to the step of plating the wires so that when the wires are plated using electroplating, the first substrate is plated in areas that do not electrically connect the wires,

wherein the surface of the first substrate opposite the surface bonded to the wires is coated with a conductive material, and

wherein vias provided through the first substrate connect the wires to the conductive material so that the wires are interconnected during the electroplating process.

9. The method of claim 1, further comprising the step of coating the wires with at least one additional layer of etchable material prior to the step of plating, wherein the step of removing the wires further comprises removing the additional layers of etchable material.

10. The method of claim 1, wherein the wires are removed by etching.

11. The method of claim 1, further comprising:
inserting interconnect wires in openings in the plated through holes, wherein the interconnect wires extend outside the plated through holes from a first surface of the second substrate.

12. The method of claim 11, further comprising:
applying solder bumps to electrically contact the plated through holes on a second surface of the second substrate opposite the first surface.

13. The method of claim 11, wherein the interconnect wires further extend outside the plated through holes from a second surface of the second substrate.

14. The method of claim 11, wherein the wires removed were curved to form curved plated through holes, and wherein the interconnect wires inserted into the plated through holes are held in place by friction between the curved plated through holes and the interconnect wires.

15. The method of claim 1, further comprising:

inserting resilient probes in openings in the plated through holes, wherein the second substrate and resilient probes form part of a probe card assembly.

16. A method of manufacturing plated through holes comprising:
bonding wires coated with a first layer of material to a substrate;
plating the coated wires;
removing a portion of the plating to expose the coated wires; and
etching to remove the first layer of material, leaving the plating material forming the plated through holes with the wires disposed inside.
17. The method of claim 16, further comprising:
bending the plated through holes to cause the wires disposed inside to extend outside of openings formed by the plated through holes.
18. The method of claim 16,
wherein only a portion of the first layer is removed, leaving a portion of the wires coated with the first layer to provide support for the wires within the plated through holes.
19. The method of claim 16, further comprising the step of forming balls at the end of the wires using an electro-flame off tool, wherein the step of bonding the wires to the substrate comprises bonding the balls to the substrate.
20. A method of manufacturing conductive attachment wells on a surface comprising:

forming a masking material with openings on the surface;
filling the openings in the masking material with etchable fill material;
removing the masking material, leaving the etchable fill material on the surface;
applying a plating material over the etchable fill material;
applying a casting material over the first surface and the plating material;
grinding down the casting material and the plating material so that the plating material is removed from over at least a portion of the etchable fill material; and
etching away the etchable fill material leaving the plating material forming the conductive attachment wells.

21. The method of claim 20, further comprising:

providing grinding stops of the surface prior to the step of applying a casting material over the first surface; and

removing the grinding stops after the step of grinding down the casting material, wherein the step of grinding down the casting material comprises grinding until the grinding stops are reached.

22. The method of claim 20, further comprising:

inserting wire probes in the attachment wells; and
bonding the wire probes to the attachment wells.

23. The method of claim 20, further comprising:

filling the attachment wells with solder to increase attachment strength to the wire probes.

24. The method of claim 20, wherein the openings in the masking material comprise a first rectangular area provided near the surface of the masking material above a second larger rectangular area, the method further comprising inserting a resilient probes into the attachment wells, wherein the resilient probes each include a slot, and the resilient probes each include protruding portions extending laterally into the second larger rectangular area engaging the first rectangular area to limit the ability to remove the probes.

25. A method of manufacturing a substrate with twisted spring contacts comprising:
twisting wires made of a first material;
plating the wires with an electrically conductive material;
inserting the wires into stencils;
forming a dielectric material around the plated wires to create a substrate; and
removing the first material and the stencils.

26. The method of claim 25 wherein the wires are twisted after being inserted into one of the stencils.